

Robotic Solutions for Inspection and Maintenance in Accelerator Harsh Environments

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Nowadays, intelligent robotic systems are becoming essential for industry and harsh environments, such as the CERN accelerator complex. Aiming to increase safety and machine availability, robots can help perform repetitive and dangerous tasks which humans either prefer to avoid or are unable to do because of hazards, size constraints or the extreme environments in which they take place, such as outer space or radioactive experimental areas. In this presentation, the state of the art in industrial and experimental robotics is presented, as well as the current status of the robotic activities and the application of artificial intelligence performed at CERN by the EN-SMM group. Several robotics solutions have been applied in the past years at CERN, as well as custom made robotic devices. New ideas and solutions could emerge in a near future to increase safety of CERN personnel, decreasing radiation dose intake and increasing machines uptime. Current and future research and development in robotics are described, as well as the results from the commissioning of various novel robotic controls.

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